

WHAT IS CLAIMED IS:

1 1. A method of flat-field calibrating an image
2 comprising:

3 obtaining a plurality of images

4 performing linear regression on the plurality of images
5 to obtain a gain and an offset; and

6 determining the desired image using the gain and the
7 offset.

1 2. The method of Claim 1, further comprising obtaining
2 a plurality of images ranging from dark current to full-well.

1 3. The method of Claim 1, further comprising performing
2 linear regression on each pixel of the plurality of images.

1 4. The method of Claim 1, further comprising
2 calculating the desired image using the equation:

3 Desired_image = (Measured_image - offset_map) / gain_map.

1 5. The method of Claim 1, further comprising moving a
2 calibration slide while obtaining the plurality of images.

1 6. A method of reducing offset map noise comprising:

2 obtaining a plurality of images

3 obtaining the average dark current of the plurality of
4 images; and

5 determining the desired image using the gain and the
6 average dark current.

1 7. The method of Claim 6, further comprising obtaining
2 a plurality of images ranging from dark current to full-well.

1 8. The method of Claim 6, further comprising
2 calculating the desired image using the equation:

3
$$\text{Desired_image} = (\text{Measured_image} - \text{average dark current}) /$$

4
$$\text{gain_map}.$$

1 9. The method of Claim 6, further comprising averaging
2 multiple frames to determine the desired image.

1 10. A method of reducing field curvature in an image
2 comprising:

3 obtaining an average curvature map of a plurality of
4 image panels;

5 dividing each panel by the curvature map.

1 11. The method of Claim 10, further comprising
2 normalizing the curvature map by the average intensity of the
3 curvature map.

1 12. The method of Claim 10, further comprising smoothing
2 the curvature map.

1 13. The method of Claim 10, further comprising using
2 only pixels above a background intensity to obtain the average
3 curvature map.

1 14. The method of Claim 10, further comprising reducing
2 noise in the image by curve-fitting the image pixels.

1 15. A method of reducing discontinuities between
2 adjacent panels in an image comprising:

3 comparing a border of each panel on all sides to generate
4 border intensity scaling values; and

5 scaling a boundary of each panel to a point approximately
6 midway between a current panel and an adjacent panel.

1 16. The method of Claim 15, further comprising scaling
2 the boundary of each panel using an inverse square weighting.

1 17. The method of Claim 15, further comprising scaling
2 the boundary of each panel using an inverse weighting.